

Factors associated with use of personal proactive equipment among community health agents in a coastal municipality in northern São Paulo, Brazil

Fatores relacionados ao uso de equipamentos de proteção individual em agentes comunitários de saúde de um município do litoral norte de São Paulo

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ABSTRACT | Background: Community health agents (CHAs) are a part of Family Health Strategy multidisciplinary teams, and their function is to develop individual and collective health promotion, recovery and preventive actions, including household visits. Their work exposes CHAs to hazards in the work environment, therefore, using personal protective equipment (PPE) is essential. **Aims:** To draw the sociodemographic and occupational profile of CHAs and investigate associations with use of PPE. **Methods:** Cross-sectional quantitative study performed with 137 CHAs in a coastal municipality in the north of the state of São Paulo, Brazil. We applied a questionnaire for sociodemographic and occupational data. The data were subjected to descriptive and inferential analysis, with significance level of 5%. **Results:** 94.16% of the participants were female, and their average age 34.80 years old. Their average time in the job was 3.18 years. The means of transport most often used to commute was bicycles. 94.16% of the participants reported daily use of some type of PPE, which included: sunscreen (88.32%), closed footwear (53.28%), hats (8.0%), sunglasses (6.57%) and raincoats (3.65%). We found significant association between use of PPE and longer time in the job, and between wearing closed footwear and older age and longer time in the job. **Conclusion:** The results point to the need of interventions to promote use of PPE.

Keywords | community health workers; occupational health; protective equipment.

RESUMO | Introdução: O agente comunitário de saúde (ACS) integra uma equipe multiprofissional na Estratégia Saúde da Família (ESF) e tem por função o desenvolvimento de ações individuais e coletivas de promoção, prevenção e recuperação da saúde, incluindo visitas domiciliares. O trabalho do ACS o expõe a riscos presentes no ambiente laboral; nesse contexto, o uso de equipamentos de proteção individual (EPI) é fundamental. **Objetivos:** Identificar o perfil sociodemográfico e de trabalho de ACS e verificar associações com a utilização de EPI. **Métodos:** Estudo transversal, quantitativo, realizado com 137 ACS de um município do litoral norte de São Paulo, Brasil, por meio de um questionário contendo dados sociodemográficos e relacionados ao trabalho. A análise foi realizada estabelecendo-se as análises descritivas e inferenciais, considerando estatisticamente significativos os resultados com $p=0,05$. **Resultados:** 94,16% dos ACS são mulheres, com idade média de 34,80 anos. O tempo médio de atuação profissional foi de 3,18 anos; o tipo de transporte mais utilizado entre a UBS e a residência e para exercer o trabalho na microárea foi a bicicleta; 94,16% dos ACS referiu utilizar algum tipo de EPI diariamente. Os tipos de EPI relatados foram: protetor solar (88,32%), sapato fechado (53,28%), boné (8,03%), óculos de sol (6,57%) e capa de chuva (3,65%). Verificou-se associação significativa entre utilização de EPI e maior tempo de profissão, entre uso de sapato fechado e maior idade e maior tempo de profissão. **Conclusão:** Os resultados evidenciam necessidade de intervenções para favorecer o uso desses equipamentos.

Palavras-chave | agentes comunitários de saúde; saúde do trabalhador; equipamentos de proteção.

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INTRODUCTION

Community health agents (CHA) are members of Family Health Strategy (FHS) multidisciplinary teams, whose function is to develop individual and collective health promotion, recovery and preventive actions by means of household visits to all residents in their area of coverage. They also coordinate educational groups. Thus, CHAs represent a significant link between the community and other team members^{1,2}.

CHAs are exposed to hazards present in the work environment. To perform household visits, they need to travel a long distance, often across uneven ground and under variable weather conditions. Additional hazards are visits to high-risk and insalubrious locations, drug trafficking areas and presence of dangerous dogs³⁻⁵.

Therefore, using personal protective equipment (PPE) is essential within this context, as stated in the Regulatory Standard no. 6 (RS 6)⁶, which aim is to protect workers from risks to their safety and health.

However, there is a lack of studies or specific regulations on the type of PPE appropriate for CHAs, resulting in irregular use in actual practice. Since PPE should be determined as a function of the working conditions, the aims of the present study were to draw the sociodemographic and occupational profile of CHAs and investigate possible associations with use of PPE.

METHODS

The present cross-sectional and quantitative study was performed at the 22 FHS units serving a coastal municipality in the north of the state of São Paulo, Brazil. The study population corresponded to the 166 CHAs allocated to these units. The single inclusion criterion was to be currently performing the job at the time of data collection. As a result, the sample comprised 137 CHAs.

The study was granted institutional authorization, and was approved by the research ethics committee of University Guarulhos (ruling no. 723/11) in compliance with the ethical principles in the Brazilian legislation. Data collection was performed in a secluded room to ensure safety and privacy. We administered

a questionnaire with semi-open questions to investigate sociodemographic and occupational data (time in the job, means of transport to/from work, calls after working hours, weekly working hours in an eventual second job, and use of PPE).

The data were entered twice in Microsoft Office Excel® 2007 spreadsheets. Following correction of mistakes and inconsistencies, the data were analyzed using software Statistical Package for the Social Sciences (SPSS), version 22.0, and included the descriptive and inferential analyses relevant to the study aims. First the data were subjected to simple descriptive analysis, including calculation of absolute and relative frequencies, mean, standard deviation (SD) and minimum and maximum values. The association of sex with use of PPE and type of PPE used was investigated by means of Fisher's exact test, the association of use of PPE and age and time in the job with the Kruskal-Wallis test, and of PPE type and age and time in the job with the Wilcoxon-Mann-Whitney test. The significance level was set to $p=0.05$.

RESULTS

SOCIODEMOGRAPHIC CHARACTERIZATION OF COMMUNITY HEALTH AGENTS

Most CHAs were female (94.16%), with average age 34.80 years old (SD 9.96, minimum 19, maximum 62), being that 71.53% were within age range 19 to 29 years old. About 60.58% reported to have a stable partner, and 75.18% had children.

The family income varied from BRL 759.00 to BRL 5,000.00, *i.e.*, 1.22 to 8.03 times the equivalent of the minimum wage (MW), mean 2.66 times MW (BRL 1,653.00) at the time when the study was conducted (BRL 622.00). The salary of CHAs corresponded to 1.22 times MW (BRL 759.00).

Fourteen (10.22%) CHAs reported to have a second job. Two were street food vendors, three housemaids, two autonomous vendors, three worked in the beauty industry, three were waitresses and one was a handyman. The average working time in the second jobs was 9.06 hours per week (SD 5.60) varying from 4 to 20.

OCCUPATIONAL CHARACTERISTICS OF COMMUNITY HEALTH AGENTS

As Table 1 shows, the average time in the job was 3.18 years, bicycles the most common means of transport to commute, and the average commute duration 13.37 minutes.

A total of 101 participants (73.72%) stated they received calls from service users after hours.

Most CHAs reported to use some type of PPE (Table 2).

As seen in Table 3, the most common PPE used was sunscreen (121; 88.32%) and closed footwear (73; 53.28%).

We investigated the association of use of PPE with age and time in the job. As Table 4 shows, PPE was more frequently used by the CHAs with longer time in the job.

We did not find association between type of PPE used and sex (Fisher's test). In regard to the relationship of type of PPE used with age and time in the job, we only found positive association between closed footwear and older age [wore closed footwear: n=73; mean 36.38 years old (SD 9.96), minimum 20 and maximum 62 years old; did not wear closed footwear: n=64; mean 36.38 years old (SD 9.72), minimum 19 and maximum 54 years old; p=0.034] and longer time in the job [wore closed footwear: n=73; mean 3.80 years (SD 2.70), minimum 0, maximum 10 years; did not wear closed footwear: n=64; mean 2.47 years (SD 2.97), minimum 0, maximum 11 years; p<0.000] (Wilcoxon-Mann-Whitney test).

DISCUSSION

Most CHAs were women at the top of their productive capacity, and more than half of the participants had a stable relationship. These findings agree with the ones reported for other areas in Brazil⁷⁻⁹.

The average family income, 2.66 times the equivalent of the minimum wage, is slightly higher compared to the one reported in a recent study⁸ conducted in Aracaju, Sergipe, Brazil, in which 68.55% among 222 CHAs reported to earn one to two times the equivalent of the minimum wage.

The second jobs reported by the participants had nothing in common with their work as CHAs. This finding

suggests that these jobs were performed for the exclusive purpose of increasing income, and are likely to cause overload. Also, other authors⁸ found that CHAs (11.3%) had more than one job.

Table 1. Distribution of community health agents per time in the job and means of transport used to commute and perform job activities. São Paulo, Brazil, 2012 (n=137).

Variables			%
Time in the job	Minimum/maximum	1 month/11 years	..
	mean	3.18 years (SD=2.90 years)	..
	<1 year	36	26.28
	1-3 years	48	35.03
	3-6 years	38	27.74
	6-9 years	1	0.73
Means of transport to commute	9-12 years	14	10.22
	Bicycle	114	83.21
	Walking	14	10.22
	Walking or bicycle	4	2.92
	Motorcycle	2	1.46
	Bus	1	0.73
Means of transport to perform job activities	Bicycle or car	1	0.73
	Walking or car	1	0.73
	Bicycle	104	75.91
	Walking	16	11.68
	Walking or bicycle	14	10.22
	Bicycle	2	1.46
Commute duration/minutes	Bicycle or motorcycle	1	0.73
	Minimum/maximum	1/60	..
	Mean	13.37 (SD=9.84)	..
	1-15	78	56.93
	15-30	47	34.31
	30-45	9	6.57
	45-60	0	0.00
60-75	2	1.46	
Did not respond	1	0.73	

N: number; SD: standard deviation.

The high turnover rate is evidenced by the fact that more than half of the participants had been in the job for less than 3 years. For many, work as CHA is a temporary occupation rather than their first choice, which makes them look for better positions through further learning and acquisition of technical knowledge in healthcare or other field¹⁰.

The largest proportion of participants used bicycles to commute to/from work and to perform household visits. For this reason, they must pay continuous attention to traffic, including motor vehicles, other cyclists, pedestrians and domestic animals, at the same time they must keep their balance, and answer eventual calls from patients along the route. Therefore, using bike helmets as PPE is essential for this population of workers, as a function of the risk of falls.

The average commute duration was quite short, as most participants lived in the same area where they worked. This fact also accounts for the frequent calls of service users after hours. Some participants reported that their privacy is not respected, but are called any time of day — at lunch, at night, on weekends — and wherever they might be, as in the supermarket or at church.

Living in the area where they work might facilitate the links of CHAs with the community, as well as their function as mediators between the community and the healthcare staff. But at the same time, it blurs the boundaries between their professional and personal lives, giving rise to the feeling of working nonstop.

At the analyzed units there was no standardization of the PPE CHAs should use. Most participants reported to use at least one type of PPE, mainly sunscreen, followed by closed footwear, hats, sunglasses and raincoats or

umbrellas. No participant reported to wear bike helmets, even though bicycles were the most frequent means of transport used to perform the job activities. Similarly, no participant reported to wear adequate gloves as PPE during visits for dengue prevention.

The participants reported they received sunscreen with SPF 30 every month from the FHS/CHA managing company, and eventually also closed footwear and uniforms (short-sleeve shirts, Bermuda shorts, vests and hats).

In another study¹¹, several CHAs wore open footwear even though they regularly received closed footwear. The authors consider that using PPE is extremely important for the protection of the health and physical integrity of workers, in particular “sunscreen, long-sleeve shirts, hats, bike helmets and compression stocking.”

We found significant association between use of PPE and more than 3 years in the job. We also found

Table 3. Distribution of community health agents per type of personal equipment used. São Paulo, Brazil, 2012 (n=137).

Variables	n	%
Type of personal protective equipment		
Sunscreen	121	93.80
Closed footwear	73	56.59
Hats	11	8.53
Sunglasses	9	6.98
Raincoat or umbrella	5	3.88
Total	219*	

*Several participants reported to use more than one type of personal protective equipment .

Table 2. Distribution of community health agents per sex and use of personal protective equipment. São Paulo, Brazil, 2012 (n=137).

	Use of personal protective equipment								p-value*
	Yes		No		Sometimes		Total		
	n	%	n	%	n	%	n	%	
Sex									
Female	121	93.80	5	3.87	3	2.33	129	100.00	1.000
Male	8	100.00	0	0.00	0	0.00	8	100.00	
Total	129	94.16	5	3.65	3	2.19	137	100.00	

*Fisher's test.

statistically significant association between wearing closed footwear and older age and longer time in the job. One might infer that a longer time in the job and older age make workers more thoroughly acquainted with their occupation and the risks inherent to the work process, and thus contribute to higher adherence to the use of PPE.

NR 6⁶ makes mandatory for employers to provide PPE and orientation and training on its use, to demand employees to use it, and “immediately replace [it] when damaged or lost.” In turn, employees are responsible for the equipment they receive, must report any damage, and use it adequately as established by the employer.

Regulatory standard no. 32 (RS 32)¹² sets guidelines for “measures for the protection of the safety and health of workers at healthcare services, as well as the ones involved in health promotion and care in general.” Among such measures, employers should ban open footwear and provide free uniforms to employees.

CHAs work under unhealthy conditions, are exposed to variable weather conditions (strong sunlight, rain, wind, cold), uneven ground, domestic animals and individuals with different diseases, among other factors. Therefore, using adequate uniforms and PPE is indispensable for protection and disease prevention among this population of workers, given their actual working conditions.

A study¹¹ performed with the all the CHAs in a municipality in the Central-West region of Brazil found that 26.82% of them had suffered work accidents, among which the most relevant were falls, incidents involving domestic animals (dog bites), insect bites and stings, and wounds caused by barbed wire. In another study³ conducted with 137 CHAs, the results showed that 43.07% had suffered work accidents, the most frequent being trauma from bike accidents, dog bites and falls. Also instances of wounds caused by broken toilets and tins during visits for dengue prevention were described.

Long and cumulative exposure to ultraviolet (UV) radiation is known to be harmful to the eyes and the skin, causing photoaging and increasing the incidence of nonmelanoma skin cancer¹³, pterygium, photokeratitis, chronic conjunctivitis, cataracts and macular degeneration¹⁴.

The following photoprotective measures are recommended to minimize risk and health problems: wearing wide brim hats, UV protection sunglasses, sunscreen and adequate clothes (long-sleeve shirts and pants)^{6,12,15}.

A study¹⁶ conducted in New Zealand with 1,061 workers in nine different occupations potentially involving excessive sun exposure found that the sun-protective practices most frequently adopted were wearing hats, sunglasses and sunscreen on exposed body parts. Effective sun-protection was strongly associated with PPE provision by employers and a sun-protection culture, which led to conclude that

Table 4. Distribution of community health agents per age, time in the job and use of personal protective equipment. São Paulo, Brazil, 2012 (n=137).

	Use of personal protective equipment			
	n	Mean (standard deviation)	Minimum/maximum	p-value*
Age (years)				
Yes	129	35.02 (9.91)	20/62	0.278
No	5	34.20 (11.58)	22/50	
Sometimes	3	26.00 (8.18)	19/35	
Total	137	34.80 (9.96)	19/62	
Time in the job (years)				
Yes	129	3.32 (2.92)	0/11	0.019
No	5	1.00 (1.00)	0/2	
Sometimes	3	0.75 (0.00)	1/1	
Total	137	3.18 (2.90)	0/11	

*Kruskal-Wallis test.

workplace factors and interventions by employers are the variables that most influence adequate sun protection among workers.

CONCLUSION

The participants were predominantly women and young adults. Their average time in the job was of 3 years, and bicycles were the most common means of transport to commute and perform household visits. Most participants reported to use some type of PPE, the most frequent being sunscreen and closed footwear. PPE was more frequently used by the CHAs with longer time in the job. Few participants reported to wear hats, sunglasses or raincoats, and none reported to wear bike helmets or gloves during visits for dengue prevention.

Upon travelling daily under strong sunlight and rain, on uneven ground, walking or riding a bike, CHAs are exposed to hazards which might be minimized through the use of PPE supplied by the employers, such as wide

brim hats or caps, UV protection glasses, sunscreen adequate to the skin type, long-sleeve T-shirts, hard-wearing pants, closed footwear, gloves appropriate to handle rubbish during dengue prevention visits, and for the ones who use bicycles as means of transport, bike helmets and adequate bike maintenance. These measures should be adopted, provided and supervised periodically by the employer.

In addition, CHAs should receive information on the risks inherent to their occupation, the most common work accidents, and the relevance of adequate use of PPE. These actions are significant, as they might help CHAs change their behavior as concerns the prevention of health problems.

We emphasize the relevance of conducting similar studies in other locations, as the present one was performed at a single municipality. Also, research on work accidents and work-related diseases among CHAs is significant to reinforce and back actions for health promotion and disease prevention targeting this population of workers.

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